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ILLUSTRATIONS AND DESCRIPTIONS OF

SPECIES OF SOME PYRRHOPYGINAE FROM PANAMA (HESPERIIDAE)

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The past ten years' collecting in the Republic of Panama and in the Canal Zone have produced new information on previously described species of the HESPERIIDAE and a number of new species (Nicolay & Small, 1969 and Nicolay, 1973). The purposes of this paper are to describe new sub-species in the genera *Zonia* and *Myscelus*, provide additional notes on species already named, and to illustrate species not figured previously.

Zonia zonia panamensis Nicolay, new subspecies

Figures 1f, 2f, 5, 6, 7

Male: Length of forewing, 29 mm. Upperside: forewing black, a discal row of conjoined white hyaline spots from vein 1 through cell to coastal margin in spaces 11 and 12, the latter as narrow streaks, but triangular in interspace 1b, rectangular in space 2, almost square across cell; a narrow, small triangular white hyaline spot in interspace 3, the apex not reaching vein 4; white hyaline apical spots in spaces 4 and 5, three smaller spots across the upper edge of spot in space 5 in spaces 6, 7 and 8. A narrow bluish-white basal band from costa to inner margin, another pale blue parallel sub-basal band from costa to inner margin continued as a broken blue bar in space 1a to termen, then as a sub-marginal blue line to spot in space 3 with a few blue scales toward apical spot in space 5. Hindwing black, upper and lower bluish-white basal streaks, separate and not reaching the central white hyaline band which is 1 mm wide, extending from vein 2 into interspace 7, but not reaching vein 8; a submarginal bright blue macular band from interspace 1b to vein 7. Fringes dark brown. Underside: forewing dull black, hyaline markings of the upperside repeated in like manner; sparse pale blue scaling at wing base; a scattering of blue scales submarginally from end of spot in space 3 to inner margin. Hindwing black, inner margin blue-scaled; a sub-basal blue-white band from mid vein 1 to costa; central hyaline band as on upperside with an added double blue spot in space 1c; submarginal macular blue band narrow, broken outward at vein 4, widening toward costal margin. Fringes white, checked brown at each vein end. Palpi and forecoxae white stripped; head and patagia white spotted; thorax with 4 bluish-white stripes; abdomen with alternate bluish-white and black bands; anal tuft dark brown.

Female: Unknown.

Fig. 1. — Upper row, left to right (a) *Myscelus assaricus michaeli* Nicolay allotype ♀, Madden Forest Preserve, Canal Zone; (b) *Myscelus assaricus michaeli* Nicolay, holotype ♂, Madden Forest Preserve, Canal Zone; (c) *Myscelus assaricus mapiri* Strand ♂, Rio Songo, Bolivia 750 m.: Lower row, left to right (d) *Aspitha leander* Boullet ♀, Gatun, Canal Zone; (e) *Aspitha leander* Boullet ♂, Gatun, Canal Zone; (f) *Zonia zonia panamensis* Nicolay, holotype ♂, Madden Forest Preserve, Canal Zone.

Correction: (Fig. 1 and 2); Left and right reversed.

In place of 'left to right', please read 'right to left'.

Fig. 2. — Upper row, left to right; underside of the same species as illustrated in figure 1.
Lower row, left to right; underside of the same species as illustrated in figure 1.

Holotype male, Madden Forest, Panama Canal Zone, 6 Feb. 1968, collector, S. S. Nicolay. Paratypes, same locality; 1 ♂ 15 Aug. 1968, 1 ♂ 15 Dec. 1968, 1 ♂ 23 July 1969, 1 ♂ 24 July 1969, G. B. Small, collector. The holotype will be deposited in the American Museum of Natural History, New York, New York, the paratypes, in the collections of the author and Mr. G. B. Small.

Panamensis has been one of our most interesting catches in the Canal Zone in recent years. Evans (1951) described the nominate species *zonia* for which he erected the genus. Known only from the single male type taken at Teffe (Ega) Amazonas in 1879, it has not been figured previously. Photographs of the type, (Figures 3 & 4) were provided by Mr. R. E. Vane-Wright of the British Museum (Natural History). He also sent photographs of an additional male specimen now in the BM which was taken recently by C. B. Roberts/BM on the Potaro River, British Guiana in 1969; it agrees completely with the type.

I took *panamensis* for the first time in February, 1968 at a hilltop in the Madden Forest Preserve. Here, with other "hilltopping" companion species of the genera *Elbella* and *Phocides,* it swept back and forth across a broad expanse of open grassy hilltop meadow with an incredibly swift and booming flight. The method for collecting was relatively simple—stand at an appropriate place in their flight pattern and, with a long-handled (about 12 feet) net, attempt to intercept them in full flight! The percentage of successful intercepts is very low, but none-the-less, rewarding.

Gordon Small's experience on many subsequent efforts in this same local reveals that *panamensis* was present very infrequently, if at all, around 11:30 A.M., and only singly. It also occasionally landed on a small bushy tree where he took all of his specimens. The *Elbella* species were also taken after alighting; *Phocides* species flew unceasing, never seeming to land.

Panamensis differs from the nominate species *zonia* in that there is no hyaline spot in space 9 on the forewing, and the width of most hyaline spots is about one-third less; the spot in interspace 3 on the forewing is, in *panamensis,* only a fraction of the width and size of that in *zonia.* Other less obvious differences may be noted by comparing the appropriate figures.

The genitalia are identical, with the exception of the valvae; those in the nominate form are tapered rather gradually and without interruption to the terminal teeth; those of *panamensis* are

wider thru-out more of their length, finally tapering rather abruptly to the terminal teeth, particularly from the dorsal surface. The terminal teeth are somewhat blunt and there is a slight asymmetry in the valvae of both species; this latter varies slightly with each specimen thus far examined.

Zonia and its subspecies *panamensis* are both apparently very uncommon insects; I have been unable to find additional specimens in the many collections I have searched; nor have I noted its presence in the various lists that are published relevant to specific regions where it may occur. It bears a striking resemblance to *Jemadia hewitsonii albescens* Röber in size, wing shape and pattern, but a close inspection will quickly reveal the notable differences.

Myscelus assaricus michaeli Nicolay, new subspecies

Figures: 1a, 1b, 2a, 2b, 8

Male: Length of forewing, 22 mm. Upperside: forewing with a yellow-orange basal area, remaining 3/4 of the wing, blue-black with an indigo sheen; a discal row of hyaline white spots in spaces 1b, 2 and across cell with the widest spot at 2½ mm in space 2; all spots clearly separated by black veins; smaller white hyaline spots in spaces 3, 4, 5 and three small rectangular apical spots in spaces 7 - 9, all forming a vague, elongate "S"-shape; a line of vaguely defined, pale blue sub-marginal spots from first apical spot in space 7 through 1b. Hindwing basal 3/4 yellow-orange, outer quarter shining blue-black with an indigo sheen; black post-discal spots from space 1b through 7, conjoined in spaces 1b to 3 and in spaces 4 and 5; an inner black spot in space 7 and inner cell, almost invisible beneath the yellow-orange overscaling; termen deeply excavate between veins 1 through 6; fringes white below vein 6. Underside: forewing dull black, white hyaline spots of the upperside repeated; two pale bluish-white dashes above cell spot in spaces 11 and 12; a row of bluish-white spots at base of costa and sub-basal in inner cell, interspace 2 and all of 1a; a row of wide, lightly scaled blue submarginal spots from apex through space 1b. Hindwing pale blue with a macular black band near base of wing; a wider sub-median and post-median band of macular fused black spots, the two joined with a black line in space 8; a vaguely defined black outer margin; abdominal fold pale blue; fringes white from vein 7 to tornus, except black at vein ends.

Female: Length of forewing, 26 mm. Upperside: forewing maculation the same as in male, wings broader, outer margin straight. Hindwing maculation the same as in the male except the dark outer margin wider, the postdiscal spots closer to its inner edge, the wing broader and more rounded.

Above, head and collar black and white striped, tegumen, tegula and thorax densely covered with long yellow-orange hairs overlapping anterior segments of abdomen; abdominal segments ringed alternately black and pale yellow; anal tuft of long, brown pale-tipped hairs: Palpi black above, pure white below, pectus pale yellow, legs black with pale scales and long hairs; abdominal segments ringed black and white. Antennae black, pale yellow inside bend of apiculus and club.

Holotype male, Madden Forest Preserve, Panama Canal Zone, 15 July 1969, G. B. Small, collector. Allotype female, same locality, 16 July 1968, G. B. Small, collector. Paratypes: 1 ♂ same locality as holotype, 20 July 1968; 1 ♂ Gatun, C. Z., 30 Jan. 1970, 1 ♂ Gatun, C. Z., 25 April 1971, G. B. Small, collector. Two specimens in the Smithsonian's National Museum collection, a male, Carillo, Costa Rica (no date) and a female, Cayuga, Guatemala, September are also included in the type series. The holotype will be deposited in the American Museum of Natural History, New York, New York. The allotype female and one paratype male remain in the author's collection, the remainder of the paratypes, with the exception of the two National Museum specimens, in the collection of Mr. G. B. Small.

The subspecies *michaeli* extends the known range of the species complex of *Myscelus assaricus* Cramer into Central America and Mexico. *Michaeli* is most similar to the nominate form in that the hyaline spots of the forewing are approximately the same size although smaller than in *assaricus* and less than half the width of those in the subspecies *mapirica* Strand. The spots of the "S"-shaped apical row are more rectangular, almost square in *michaeli,* but very narrow and linear in the nominate form and in *mapirica.* The dark spots in the disc of the hindwing are much smaller in *michaeli* than in either of the other two subspecies, being less than half the size of those in *mapirica,* and placed closer to the inner edge of the dark margin.

The pale areas of the underside of the hindwing are bright pale blue or bluish-white in *michaeli* rather than the greenish-white of the nominate form *assaricus* and are wider and more extensive in *michaeli* with the black spots and macular bands wider and heavier in both *mapirica* and *assaricus.* The male genitalia of those few specimens available for examination appear identical. This, together with the geographical separation, consistent and obvious differences in wing maculation, establishes the basis for this subspecies identity with *M. assaricus* Cramer.

This beautiful and interesting insect is named for my oldest son Michael Darrell Nicolay who dearly loved all of nature's creatures and particularly the much maligned and misunderstood reptiles.

Aspitha leander Boullet

Figures 1d, 1e, 2d, 2e, 9

Yanguna leander Boullet, 1912, *Bull. Soc. Ent. France,* p. 92.

Yanguna parima Plotz, Mabille and Boullet, 1908, *Ann. des Sciences Nat.,* Paris, 9th Series, pp 187-88, pl 13, fig 3.

Yanguna parima Plots, Draudt *in* Seitz, 1921, *Mac. Lep. of the World,* vol 5, p 842, pl 164d.

Yanguna leander Boullet, Bell, E. L., 1933, Hesperiidae, *Jour. N. Y. Ent. Soc.,* vol XL1, Sept. pp 288-89.

Aspitha leander Boullet, Evans, W. H., 1951, *A Cat. of the Am. Hesp. in the B. M. (Nat. Hist.)* Part 1, p 84.

There has been considerable past confusion regarding this species. Described by Boullet in 1912, it none-the-less was figured in color in a paper co-authored by Boullet (1908) four years earlier as *Yanguna parima* Plotz. Seitz' (1921) figure of *parima* is in reality that of *Aspitha leander* Boullet as noted by Evans (1951). Bell (1933), although he had no specimens before him, authored an excellent, brief translation of Boullet's original description of the male *leander* that fits very well the species found in Panama. *Aspitha parima* Plotz, although obviously very closely related, is a separate species found in Surinam.

Apparently no females of *leander* had been taken or associated with the male. Evans (1951) does not mention the female, nor are characters of the female included as part of his keys. Early in 1973 Mr. G. B. Small took a pair of *A. leander* at Gatun in the Canal Zone. A description of the female follows:

Female: Length of forewing, 26 mm. Upperside: fore and hindwing color blue-black; forewing with a broad (3-4 mm) central white hyaline band from vein 1 in interspace 1b (triangular) through upper cell with a thin, broad spot in interspace 11; two tiny white hyaline spots midway between the central hyaline band and outer margin in interspace 4, the lower adjacent to vein 4, the upper, next to vein 5, a third spot above this in interspace 5; fringes whitish from vein 1 to vein 3. Hindwing with a red tornal spot 2 mm wide from inner angle through interspace 1c, with a thin, black lined outer margin, wider at end of vein 1b; fringes white from vein 1 through vein 7. Underside: all wings blue-black; markings on both wings the same as above with an additional thin line of white scales in interspace 12 above spot in interspace 11 on the forewing; wing basal area faintly paler.

Head black with small white spots at the base of and between the antennae; tegulae black, patagia at end of tegulae red; thorax and abdomen black above and below, a few whitish hairs in anal tuft. Mid and hind legs black, forelegs black with a few white hairs on femur; palpi black, a thin line of white scales in the center; a narrow line of white scales across forehead between tips of the palpi. Antennae black.

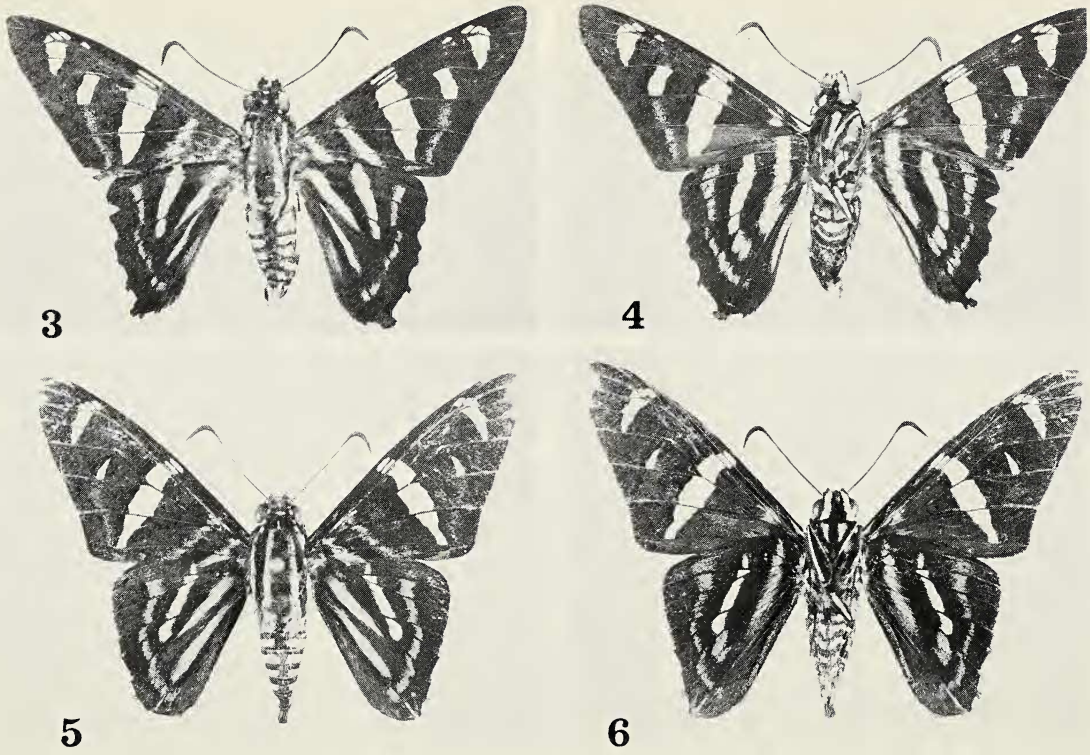

Fig. 3 and 4. — *Zonia zonia Evans,* holotype ♂, Teffe (Ega), Amazones, M. de Mathan, ler trimestre 1879/ R. Oberthür Coll, B. M. 1931-136, upper and underside.
Fig. 5 and 6. — *Zonia zonia panamensis Nicolay,* holotype ♂, Madden Forest Preserve, Canal Zone, 6 February 1968, collector, S. S. Nicolay, upper and underside.

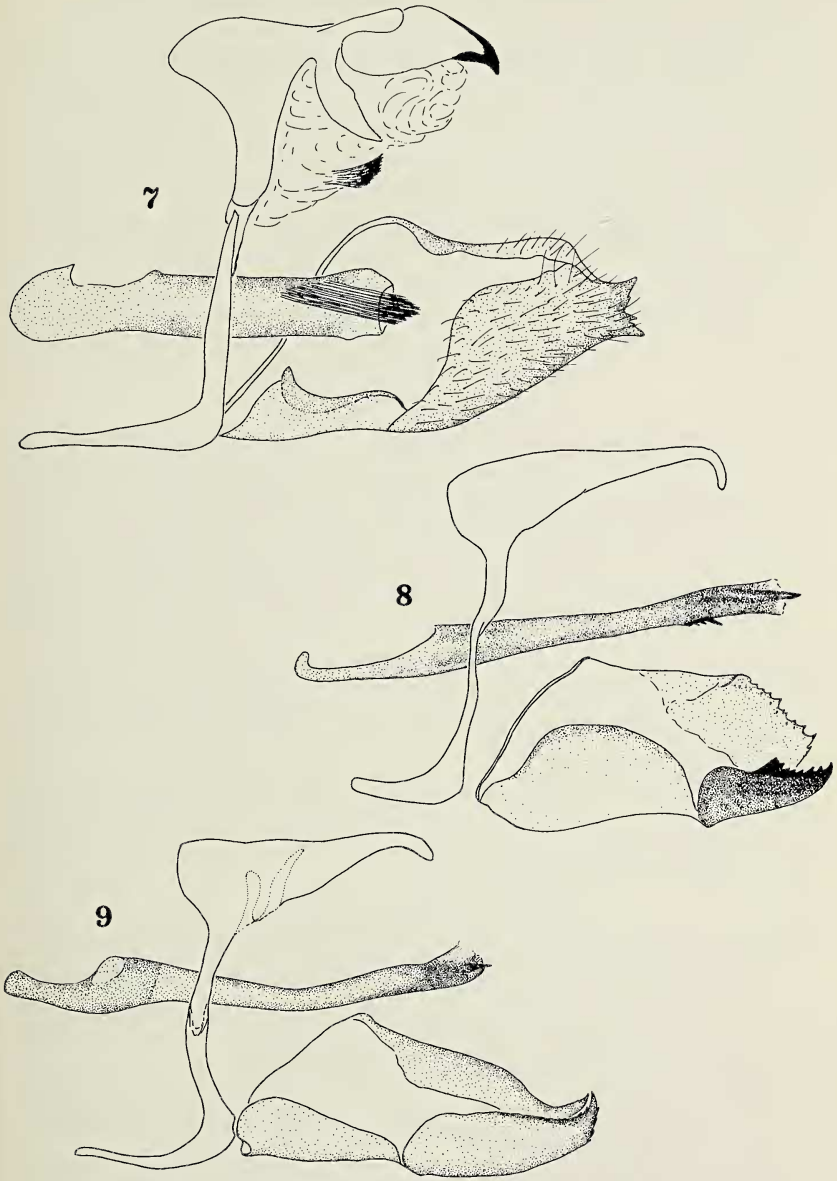

Fig. 7 - 9. — Male genitalia, reading from top to bottom (7) *Zonia sonia panamensis* Nicolay; (8) *Myscelus assaricus michaeli* Nicolay; (9) *Aspitha leander* Boullet. All drawings with left valva removed, aedeagus in position, and inner surface of right valva detailed.

It is indeed fortunate that the two specimens figured were caught *en copula*. The sexual dimorphism apparent in this very uncommon species is great enough to make matching the sexes very difficult. In addition to the obvious differences in wing fascia, as illustrated in figures 1 and 2, the hindwing in the female is not as irregular nor as sharply produced at the tornus and at the ends of veins 1b and 2; the forewing is less sharply produced at the apex and overall, more rounded and full. Another female collected near Colon in the Republic of Panama in 1969 is without the sub-apical dots of the specimen figured and described herein, but is otherwise identical.

Aspitha leander has not been previously recorded from the Republic of Panama. The type locality is Muzo, Colombia, 800 meters.

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Photographs of the *panamensis* type were made with the help of WO G. G. Thomas, and SSgt. Richard E. Banzal of the U. S. Marine Corps. The color transparencies and line drawings were made by the author.

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